

1.9504
p92

U.S. Department of Agriculture
Farm Security Administration

* * *

PRESENT RANGE PASTURE PRACTICES AND LAND USE
RECOMMENDATIONS FOR THE CUMBERLAND PLATEAU
A Summary of Opinion

By

John E. Mason
and

E.L.K. Gruehn

U. S. DEPT. OF AGRICULTURE
NATIONAL AGRICULTURAL LIBRARY

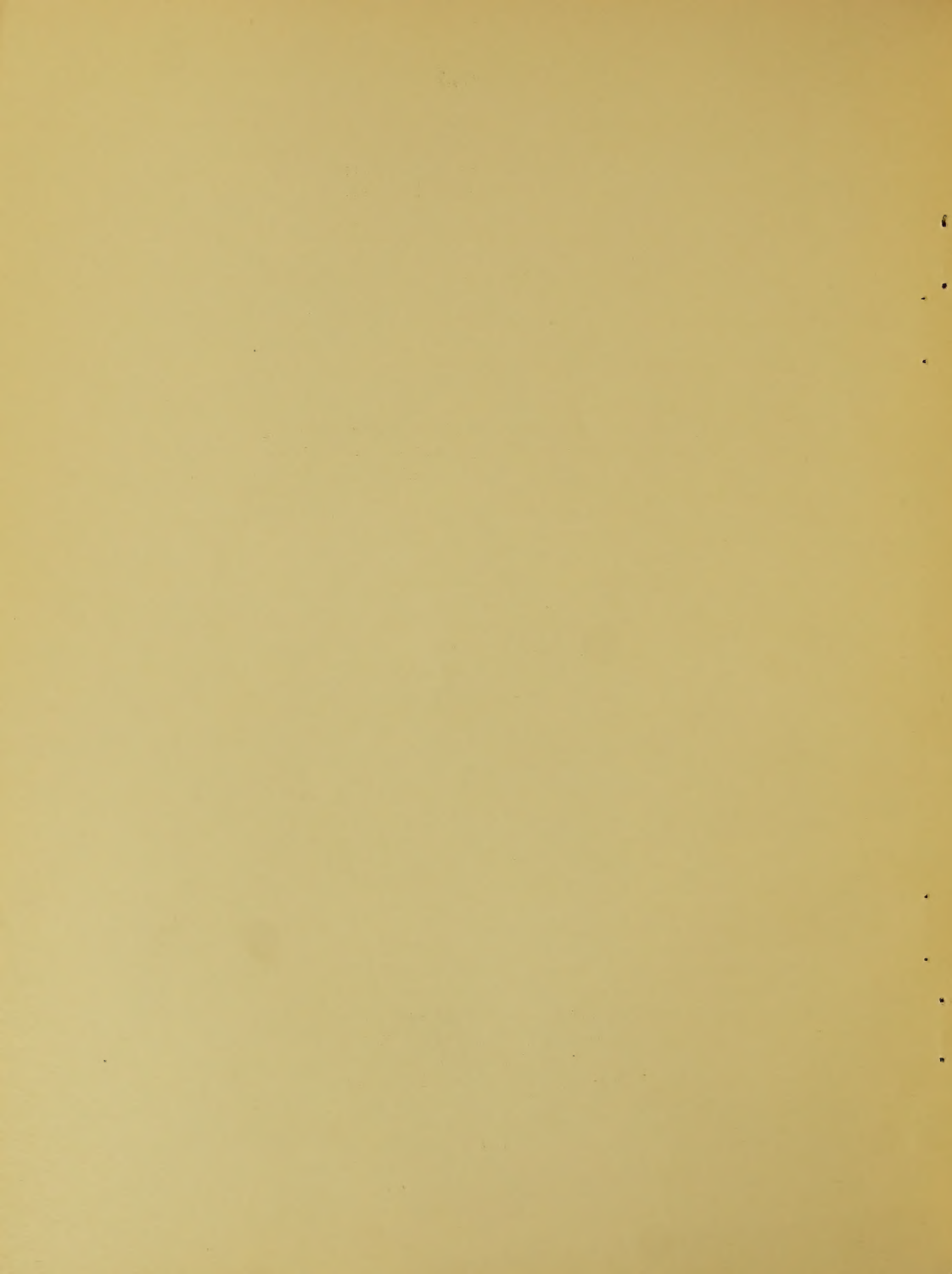
FEB 13 1964

C & R-PREP.

* * *

Land Use Planning Section
Division of Land Utilization
Region IV
Raleigh, N. C. March 1937

* * *



PRESENT RANGE PASTURE PRACTICES AND LAND USE
RECOMMENDATIONS FOR THE CUMBERLAND PLATEAU 1/

INTRODUCTION

In the area commonly known as the Cumberland Plateau in Tennessee, are some 3,250,000 acres, the major portion of which is cut-over timber land now being used as free range pasture. The average elevation is about 1800 feet, nearly 1,000 feet above the Valley of East Tennessee, or the Highland Rim of Middle Tennessee. The major part of this section is gently undulating, but there are areas so hilly and rough as to be unsuited to cultivated crops. Sandstone rock, which is near the surface over much of the area, further limits the amount of cultivable land. At best the soils are shallow. The prevailing soils are fine sandy loams which have good retentive subsoils. They have an excellent texture and are easily tilled, but are naturally deficient in both phosphoric acid and lime. 2/

1/ Counties included in this study are: Bledsoe, Cumberland, Fentress, Franklin, Grundy, Marion, Morgan, Scott, Sequatchie, and Van Buren. Parts of other counties are also on the Plateau. The following County Agents and Assistant County Agents assisted in securing much of the information: E. H. Swingle, County Agent, Bledsoe County; Eugene Gambill, Assistant County Agent, Bledsoe County; Robert L. Lyons, County Agent, Cumberland County; F. O. Clark, Assistant County Agent, Cumberland County; P. G. Crooks, County Agent, Fentress County; T. L. Mayes, County Agent, Franklin County; L. E. Barnes, Assistant County Agent, Franklin County; J. M. Crooks, County Agent, Grundy County; J. L. Ikard, County Agent, Marion County; E. L. Perry, County Agent, Morgan County; C. E. Looney, County Agent, Scott County; and Green Thomas, County Agent, Sequatchie County.

2/ The Soils of Tennessee. Circular of Information No. 5 University of Tennessee, Agricultural Experiment Station. Knoxville, April 1932.

Probably 75 percent of the area is now owned in large tracts by companies and individuals who do not live on the land. Much of it was acquired because of its mineral value and for the timber which stood on it. This free woodland range is utilized both by valley farmers and the scattered farmers living on the Plateau. There is no attempt to control or prevent grazing, no permits are required, and no fees are collected by the landowners. Neither is there much effort put forth to protect and grow more timber. Freedom from land taxes on the range used but not owned, as well as freedom from nearly all investment expenses, has afforded a cash income and considerable profit to the Cumberland Plateau and nearby valley farmers.

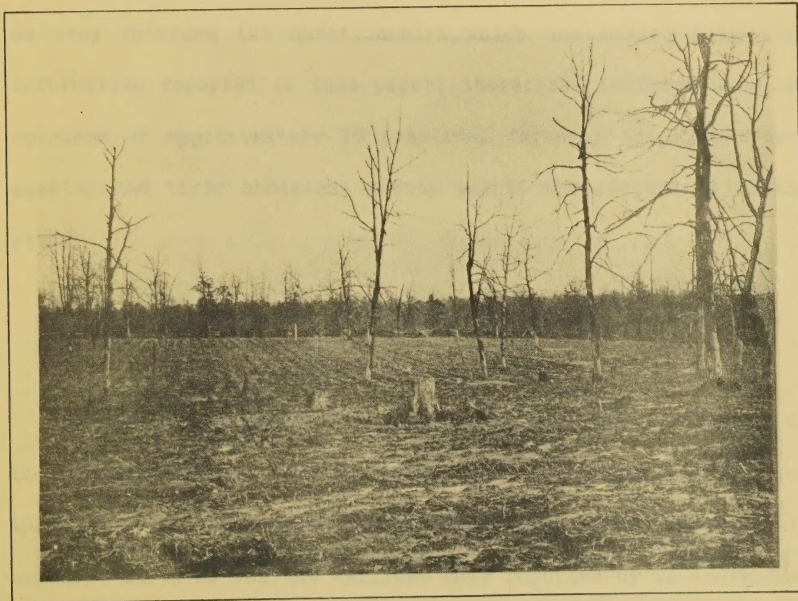
Forestry and grazing are in competition in this area and so the best use of land is a controversial question. The two enterprises cannot develop fully on the same spots, and the problem to be solved is to determine which single use, a combination of the two, or complementary use is the most economic or desirable.

Purpose of Study

The broad objective of this study was to secure useful information to support recommendations as to the best or most economic use of this large body of land. Since there are no records available on the income which the farmers are getting from this woodland pasture under present conditions, it was decided to get the best estimates possible from county agents and livestock



LAND CLEARING OF TRACT PREVIOUSLY LUMBERED.



A RECENTLY CLEARED TRACT SUITABLE FOR CULTIVATION.
DEAD TREES ARE BEING REMOVED.

men in the area. It was not intended that this study be an exhaustive piece of research, but merely a preliminary inquiry concerning the following points: (1) carrying capacity, (2) length of grazing season, (3) average gain per season, (4) dependence of farmers on range pasture as a source of income, (5) comparison of income per acre solely from timber, with that from the combination of timber and grazing, and (6) the temporary and permanent effects of burning this range land.

How Information Was Secured

The information included in this study was secured largely in two ways: (1) Personal interview and (2) questionnaire. Approximately 40 farmers were reached by personal interview and nearly as many returned the questionnaire which was mailed out. The information reported in this paper, therefore, is based upon the opinions of approximately 75 practical farmers, the nine county agents, and three assistant county agents who cooperated in the study.

INFORMATION OBTAINED FROM SURVEY

Length of Grazing Season

Based on data secured in this study, the average length of the grazing season on this plateau free range pasture is from April 15 to November 1, an approximate period of six and one-half months. March 25 was the earliest date reported by an individual

farmer for turning cattle onto the open range, and December 15 the latest date for bringing the cattle to the barns. However, it is known that many of the farmers living in the area, especially those owning small farms, allow their cattle to roam through the woods practically all the year. A majority of the valley farmers using the open range follow the above-mentioned dates very closely.

Carrying Capacity

According to the farmers' estimates, 9.4 acres of the range pasture will support an animal unit during the grazing season. Some individuals estimated that three acres would support an animal unit where there are several open places or abandoned fields within the area. On the other hand, 40 acres were thought to be necessary where the tree growth was fairly dense. Figures by counties are given in Table 1 in the appendix of this report.

At present, there is no problem of overgrazing on the Cumberland Plateau. Farmers claim that the free range has never been grazed to capacity. One reason for this is that the farmers often suffer heavy losses from thieves. It is not uncommon to lose a nice veal -- the thief taking only the hind quarters. One farmer traced his losses of this nature to an unemployed man in a nearby town. Sheep are more readily stolen, a common practice being to encircle an entire flock with wire netting and herd them into a waiting truck. These frequent losses make it unprofitable to keep any but poor grade stock on this free range. Many of the more sub-

stantial and progressive farmers, who had the land available to maintain high-grade stock on their farm pastures, were of the opinion that more money could be made by keeping better stock on the home pastures. Owners of small farms, on the other hand, felt that they must have access to the free range.

Average Gain Per Grazing Season

The farmers were very liberal in estimating gains. According to their reports a 500 pound steer would put on 227 pounds from April 15 to November 1 on the free range pasture alone. Very few farmers made estimates of less than 200 pounds gain per steer per season. Generally, the cattle which are put onto the free range have but barely maintained, and perhaps in most cases lost, weight during the winter months. Because of this, the estimated gains are probably reasonable. One farmer said, "When my cattle go to the range in April they are so poor they can hardly walk; when they return in the fall they are so fat they can hardly walk".

Quality of Pasture

Another question in which we were interested dealt with the quality of the pasture now as compared with 10 or 20 years ago. Eighteen percent of the farmers answering this question stated that the pasture is as good now as it has been since they have been using it, while the remaining 82 percent do not consider the pasture as good now as it was a few years ago. This deterioration

was generally attributed to the practice of burning which has caused erosion and depletion of soil fertility. The range is not as good now for hogs because of the cutting out of oak timber and the consequent reduction in the acorn supply.

Effects of Burning

One of the principal reasons for burning over the range is that the fire clears out the undergrowth, making it easier for the livestock to get the young tender grass. There were many conflicting opinions advanced by the farmers regarding the effects of this burning, and the notes from the most pertinent of these comments are given in the appendix of this report. The majority of the farmers interviewed agreed that burning has done great damage directly to the range by destroying the organic matter and by the outright killing or stunting and scarring of the trees. Even if the fires are beneficial to some stockmen, they are often detrimental to the interests of the timber landowners. This burning is done without regard to the possibility of damage to the forests. At this point it should be explained that livestock owners are not responsible for all forest fires which occur in a grazing area. During this study several farmers stated that damaging fires are often started by careless timber workers, and in some instances, they were purposely started to clear out brush in front of their logging operations.



TYPICAL BURNED OVER TRACT, CUMBERLAND COUNTY.



TYPICAL AREA NOW USED FOR PASTURE.
NOTE YOUNG PINE GROWTH.

Experimental investigations in Mississippi showed that the beneficial effect of burning is the removal of old unpalatable straw-like blades, thus leaving the rich and abundant green grass free from these materials. Grass on the burned areas also showed higher nutritive quality as the analysis indicated more protein, lime, and phosphorus in the green grass. The greater amount of the annual grass crop on burns is probably due in part to the earlier start it gets in the spring. Burning off of underbrush, which sooner or later crowds out the grass growth, is another beneficial effect of burning. While burning may have a slight beneficial effect upon the chemical properties of the soil, it seemed to have the opposite effect on the physical properties. Where burned, the soil was more compact, harder, and less penetrable than where fires had been excluded. 3/

Dependence of Farmers on Free Range

Many of the farmers interviewed stated in rather positive terms that they could never have made a living without the use of the free range. This was especially true with those who owned small tracts. Only one man was interviewed who had adequate records. His records showed that in 1932, 25 percent of his cash receipts came from the sale of cattle and hogs, 17 percent in 1933, and 35

3/ Wahlenberg, W. G., "Pasturing Woodland in Relation to Southern Forestry". Address delivered before Association of Southern Agricultural Workers, Nashville, Tennessee, February 4, 1937.

percent in 1934. He had used the range for both cattle and hogs. Many others estimated that 20 to 30 percent, and in some cases 50 percent, of their total income was from the sale of livestock which they could not have had without the free range.

Comparison of Income from Grazing and Timber

Using the estimates of cattle gains secured in this study, the average animal will gain 227 pounds per season. One cannot expect to finish an animal on free range pasture, and therefore the value of this gain would probably not exceed \$5.00 per hundred-weight -- a total of \$11.35. If 9.4 acres will produce this income, then an acre of free range grazing is worth \$1.21 annually, if the Plateau were used to capacity.

This figure compares with an estimated 4/ \$1.00 per acre annual income from timber, or a possible \$1.50 from combined timber and game. This estimate was made on the assumption that the forest lands would not be grazed. If grazing is continued in the forests, future lumber income will be diminished considerably, due to the fact that hardwoods have difficulty reproducing in competition with cattle.

4/ Frank, Bernard, Assistant Chief, Forestry Division, TVA.
Personal interview.

Improved Pastures on the Plateau

Available information on improved pastures on the Cumberland Plateau is limited. In this study, however, one very interesting record was obtained. In Fentress County a farmer kept 14 head of cattle on 20 acres of improved pasture from April 1 to October 1, at which time the cattle were sold. The gain in weight for this five-month period accounted for \$250 of the selling price. The cattle received no additional feed during the pasture season. The income from this improved pasture amounted to \$12.50 per acre, while that of the existing free-range is at \$1.21 per acre. This one record is obviously not enough evidence, but does show what one man has done, and bears out what one investigation states:

Improved pastures have a much higher nutritive value than the native range, supporting one head of cattle to each acre or two during the grazing season (6 to 9 months). Their grazing capacity is more than five times as great as on native range during a similar period, and the rate of gain in live weight often twice as rapid. 5/

Practically all of the farmers interviewed thought that improved pastures would be profitable. But under the present system of ownership and grazing practices little can be done by the farmers individually to improve the pasture lands. Even if the farmers owned all the suitable pasture lands, there would still be a heavy individual fencing expense, in addition to the clearing and seeding

5/ Wahlenberg, W. G. and Gemmer, E. W., Southern Forest Ranges, p. 570, Senate Document 199-Separate No. 16. Forest Service, U. S. Department of Agriculture, Washington, 1936.

costs. While improved pastures on these soils will require careful attention and occasional applications of fertilizer, the additional income will justify the trouble and expense, as higher quality meat can be produced and more readily sold than the present distinctly "Southern" type of low-grade meat now being sold.

RECOMMENDATIONS

From the direct information available, and the opinions of foresters, economists, and livestock men, the indication is that the area as a whole would have a much higher income if utilized for crops, grazing, and forestry. These uses should be complementary rather than conflicting. Operations which depend upon a primitive type of utilization can only hope to have primitive returns. Probably 20 to 25 percent of the Plateau -- the level, deep soil areas -- could be used for crops. The soil seems to be ideally suited to truck crops, as the present cultivation of potatoes, beans, cabbage, and other vegetables and fruits testify. The two main factors limiting the areas suitable for crops are soil depth and slope. Generally, soils on the Plateau less than 24" in depth or of more than six percent slope are unsuited to intertilled crops.

It is recommended that: (1) All areas of sufficient size and meeting the requirements for soil depth and slope be utilized for crop land; (2) other areas, which are too steep for crop land but not too steep for improved pastures, be cleared (leaving timber for

shade and mast) and made into improved grazing lands, some of which should be publicly owned; and (3) the remainder, a major portion, remain in forestry under public ownership.

A plan for grazing adaptable to the above recommendations has been suggested by the State Forester. 6/ Briefly, he recommended the clearing of grazing areas and allowing the stock to graze within the woodlands only when going from one area to another. If the fire lanes and other lanes connecting the grazing areas are sown in carpet-grass, there will be little incentive for livestock to browse in the forests. These grazing areas would also serve as fire protection areas. This practice would reduce fencing costs to a minimum, if not make fencing of the grazing areas unnecessary.

A readjustment plan of this sort should be undertaken slowly. Careful farm practices will have to be followed to conserve these soils which erode so readily. An educational and supervisory program will have to precede and accompany the readjustment program in order to conserve the human and natural resources.

- 00 -

6/ Hazard, J. O., State Forester. Notes taken on paper delivered at meeting of Association of Southern Agricultural Workers, Nashville, Tennessee, February 3, 4, 5, 1937.

A P P E N D I X

TABLE I. SUMMARY OF DATA SECURED IN PASTURE STUDY

County	Acres Per Animal	Length of grazing season		Average gain per season (Lbs.)	Is pasture as good now as 10 or 20 yrs. ago?	
		From	To		Yes	No
Bledsoe	7.0	4/20	10/30	225	33%	67%
Cumberland	15.2	4/17	11/9	232	12	88
Fentress	6.0	5/1	11/19	200		100
Franklin	12.3	4/15	10/30	208		100
Grundy	8.5	4/17	10/19	231	12	88
Marion	9.4	4/15	10/20	238		100
Morgan	10.0	4/11	10/31	183		100
Scott	6.9	4/18	11/2	241	28	72
Sequatchie	5.8	4/7	10/26	219	28	72
Van Buren	7.0	4/5	11/1	225		100
Average	9.4	4/15	11/1	227	18	82

Following are abbreviated comments of some of the farmers interviewed in regard to the effects of burning the range. Each paragraph contains the notes from the discussion of a single farmer.

Bledsoe County

Makes the pasture better because it clears out undergrowth, making it clear and clean for grass. Over long period of years, burning is injurious. If the burning could be controlled, would be good.

One piece of land in this community which has not been burned in twenty years and is now so thick that cattle cannot get into it, nor is there any grass on it. The non-burned area makes better winter range. Cows and sheep go miles and miles to find burned-over area in the Spring.

Range should be burned each year. Cutting out of timber has been the main cause for it being of poorer quality for there are no acorns for hogs. There is not much difference in the wild range for cattle.

After fire, land is ruined for a while, but grass comes up good. But young, tender grass seems to have a strong purgative effect which is somewhat undesirable. Fire is never of any advantage to range. However, if there is no fire, timber gets too thick and ruins the grass.

Cumberland County

It destroys beggar lice, pea vines, huckleberries, and other rich weeds.

Bad effect if burned in fall or late spring, at any time if very dry. Causes soil to wash and leaf ashes blow away by wind. No winter cover.

Damage very much if late burning is the case. Better not to burn at all if possible.

In some events burning helps pasture, especially sage grass pasture.

It destroys much of the pasture growth. Impoverishes the soil and the land becomes poorer each year. Burning the leaves and grasses clears the road for more erosion and the plant foods are

washed away until the soil fails to produce much of anything. Stock will feed on the tender grass of burned woods for a short time, but they soon go to the better pasture of the woods not burned off.

Burning improves range. Cattle will travel for miles to get to graze on burned woods. Woods that have not been burned for several years grow up in underbrush which crowds out the grass.

Makes it better for early grazing.

It does the range good. If not burned, the underbrush grows up until in a short time no grass will be seen. Then clear the underbrush off, the same wild grass comes again. Too much burning is practiced. No burning, in ten years no grass.

Fentress County

Burning causes sunlight to hit grass and speeds up growth in early spring but retards growth later.

Burning has damaged pastures.

Grundy County

Burning does not help except in special cases. Burn in February.

Burning not worthwhile.

Kills beggar lice, grape vines, and rich weeds that fatten the cattle.

Destroys seeds of rich weeds, wild pea vines, and beggar lice. Also impoverishes the soil by burning up leaves.

Makes the land poor. Lets in the sun and no protection against flies. Many kinds of food and vines never put out after the fire.

Beggar lice and rich weeds do not come the year it is burned. By experience we have found that burning depletes the range.

The burning of the range should be stopped. The fires have practically ruined some sections. Burning causes the bushes to sprout and that crowds out the grass. Kills the beggar lice, a plant that is very important in fattening cattle.

Marion County

Burning has damaged pasture.

Burning detrimental. Burned pastures are late.

Burning damages. Destroys leaves, makes water scarce.

Burning destroys leaves, decreases fertility, decreases water supply.

Burning helps, but not doing any now.

Burning destructive, decreases fertility.

Burning helps.

Burning harmful. Yearly burning not as bad as one in five years.

Too much burning and burning at the wrong season ruins the range. Burning in January, February, and March every two years does not hurt the timber and keeps the range coming. I have been grazing stock on the range for thirty-five years and try to be conservative.

Scott County

Burning ruins, kills grass, causes weeds to grow.

Burning kills pea vine. Causes more undergrowth.

Sequatchie County

No damage done if burned in mid-winter.

Cannot tell any difference. Cattle stay better on the burned range.

Where pasture has been cleared, it is better; while where it is burned it is not so good, and on burned parts the soil is eroding.

Burning helps range.

Not cattle men, but loafers set woods and range on fire, and this should be controlled.

Scott County

It damages early and late range by destroying the early winter grass and beggar lice that furnish the best pasture. The pasture becomes poorer every year on burned woods whereas it becomes better for the years that fire is kept out.

Causes a thick growth of underbrush which makes a shortage of grass.

Burning ruining pastures.

Warren County

Makes late pasture bad. If it were not burned, cattle could live a month to six weeks longer.

